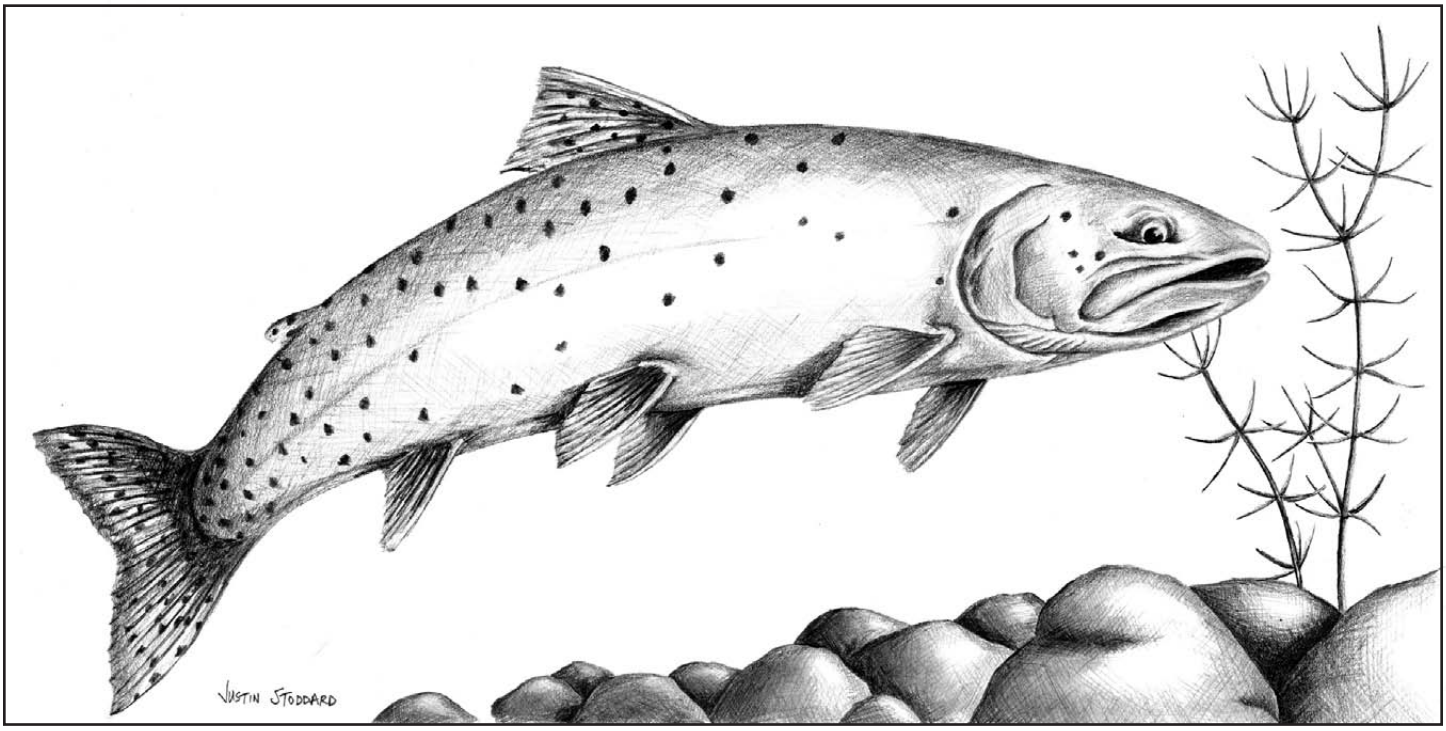
Cutthroat Trout

(Oncorhynchus clarkii)



When a fisherman talks about a "native," he's referring to the cutthroat trout (*Oncorhynchus clarkii*). Of the many kinds of trout that swim in Utah's waters today, only the cutthroat trout arrived long before the pioneers. Scientists believe the species has occupied the Intermountain West for millions of years. All other trout were imported after pioneer settlement. Rainbow trout were introduced from California. Brown trout came from Europe. Brook trout were transplanted from the east coast. Lake trout were brought down from Canada. Splake and tiger trout are man-made hybrids and are relatively new to Utah's waters. Utah's only aboriginal trout is the cutthroat.

Cutthroat trout are freshwater fish in the family Salmonidae. They are closely related to Pacific salmon such as the sockeye, king, chum, coho, and chinook, sharing the same genus, *Oncorhynchus*. It is believed cutthroat trout descended from a salmon ancestor that swam up the Columbia or Snake River about 3 million years ago. The species name of the cutthroat trout, *clarkii*, was given in honor of William Clark who coled the Lewis and Clark Expedition of 1804-1806.

Thousands of years ago, as glaciers retreated and large basins and drainages were gouged from the surface of western North America, populations of cutthroat trout became geographically isolated. Over time, this isolation in distinct drainages resulted in 15 recognized subspecies.

The fact that the cutthroat is the only real native trout in western North America prompted Idaho and Wyoming to honor the species as their state fish. Subspecies of the cutthroat are the official state fishes of Colorado, Montana, Nevada, New Mexico and Utah. The Bonneville cutthroat trout is Utah's state fish.

Five subspecies of cutthroat trout occur in Utah. These are the Bonneville (*O. c. utah*), Lahontan (*O. c. henshawi*), Yellowstone (*O. c. bouvieri*), Colorado River (*O.c. pleuriticus*) and Greenback (*O. c. stomias*) cutthroat trout.

The Bonneville subspecies takes its name from Lake Bonneville and is native to the Bonneville Basin that covered parts of Utah, Wyoming, Idaho and Nevada. The Lahontan cutthroat was introduced into Morrison Creek of the Pilot Peak Range near Wendover, probably in the early 1900s. The Lahontan is not native to Utah, but originates in the Lahontan Basin of Oregon, California and western Nevada. The Yellowstone subspecies occurs in the northwest corner of the state in the Raft River drainage and apparently arrived via the Snake River. It is native to parts of Utah, Wyoming, Idaho, Montana, and Nevada. The Colorado River cutthroat originated in the Colorado River drainage, encompassing parts of Utah, Wyoming, Colorado, Arizona, and New Mexico. What is thought to be a population Greenback cutthroat was discovered in 2009 on the southeast side of the LaSal Mountains.

The distinction between this and the Colorado River subspecies was made after mitochondrial DNA testing. However, there is still debate on whether the fish on the LaSal Mountains are actually Greenbacks or a unique lineage of Colorado River cutthroat. The Greenbacks' range in Utah is limited to a 1.2 mile stretch of Beaver Creek. Its prehistoric ancestors came from the headwaters of the South Platte and Arkansas River.

Description

The most obvious characteristic of cutthroat trout is the slash mark under the lower jaw or mandible. The color can be red, orange or pink. In the Bonneville subspecies the color can even appear yellowish or gray.

Aside from the throat slash, cutthroats are characterized by large, round, black spots that stand out from the background color of their body. In general, spots are few or absent at the head and become increasingly frequent toward the tail or caudal fin. They differ in apperance from rainbow trout, their closest relative, by having basibranchial (hyoid) teeth in their throats between the gill arches and behind their tongue. Cutthroats also typically have longer heads and jaws and larger, darker spots than rainbows. Adult cutthroat trout range in length from 6 to 22 inches and weigh from 4 ounces to 6 pounds.

Field identification of the various subspecies of cutthroat trout is difficult even for a trained observer. There are certain morphological characteristics such as spotting pattern, fin coloration, etc. that can provide clues to the subspecies, but genetic testing is required to be certain.

Habitat and Life History

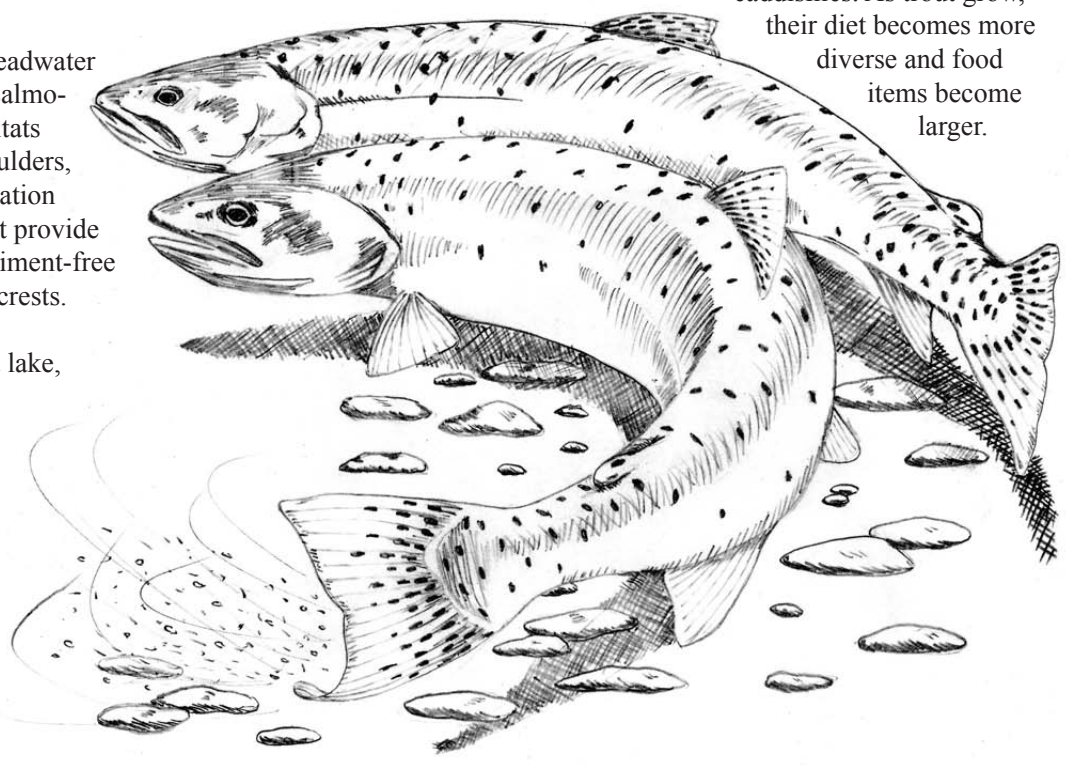
Cutthroat trout live in clear, cold headwater lakes, streams and rivers. Like all salmonids, they make use of diverse habitats with structural components like boulders, undercut banks, overhanging vegetation and large fallen trees and limbs that provide good hiding cover. They prefer sediment-free gravel substrate in riffles and pool crests.

Most cutthroats reach maturity in a lake, reservoir or stream between 3 to 5 years of age. Between March and July, males and females ascend tributaries to spawn.

After selecting an appropriate site, an egg-bearing or gravid female scours out a series of depressions or redds on the spawning bed by swimming on her side and beating the gravel with rapid sweeping motions of her body and caudal fin. The average female may produce from 1,100 to 1,700 eggs, although larger females have been known to produce as many as 4,500 eggs. After the redds are prepared, the female releases her eggs over them in the presence of a male, which envelops the eggs in a cloud of milt. Fertilized eggs settle the gravel with into the spaces between gravel. After the eggs have been deposited, a female may cover them with more gravel. Redds are then abandoned. There is no parental tending of eggs or young.

Incubation takes about two weeks, depending on water temperature. Newly hatched fish, known as sac fry, remain attached to the egg yolk. They hide in the stream gravel while the yolk is being absorbed. After absorption, the sac fry enters the fry growth stage. Fry emerge from the gravel and begin feeding on plant and animal plankton. If danger threatens, they retreat into gravel or vegetative cover. A fry's growth rate is variable, depending on a number of environmental and genetic factors. With each passing day, the probability of survival gets better. Improvements in swimming ability and buoyancy control improve a fry's ability to find food and evade predators. Despite a fry's increasing mobility, the force of the current typically carries it downstream. Consequently, maturity is most likely reached in a lake or reservoir, where a cutthroat can grow to be as old as 10 years of age.

Cutthroat trout are opportunistic feeders and primarily eat invertebrates, small fish and zooplankton. They usually feed within or just downstream of riffles where aquatic invertebrates are most abundant. Juveniles rely more heavily on insects than adult trout. Invertebrates typically eaten include the larval and pupal stages of mayflies, stoneflies and caddisflies. As trout grow, their diet becomes more diverse and food items become larger.



During the winter months, cutthroat trout seek out deep, slow-water pools that do not fill with anchor ice. Juveniles squeeze down into the spaces between rocks or boulders. Their activity levels decrease, and survival depends on the availability of suitable food, and shelter from predators, freezing water and high flows.

Cutthroat Trout in Utah History

When settlers arrived in the Salt Lake Valley, they encountered a rich fishery resource. In 1849, Howard Stansbury, a survey engineer, noted in his journal that Utah Lake abounded in "speckled trout of great size and exquisite flavor."

For a while, cutthroat trout weighing as much as 20 pounds were taken from Utah Lake. In 1864, a commercial fisherman was reported to take more than 3,000 pounds of fish in a single net haul. Commercial fishermen also set nets in Bear Lake and its tributaries and reportedly harvested 500 to 2,000 pounds of fish per day. As early as 1874, laws were enacted to protect Bonneville cutthroats but commercial netting in the region was not banned until 1897. By the 1920s, the cutthroat trout in Utah Lake were extirpated.

In response to dwindling cutthroat populations across western North America, fish and game commissions began importing eggs and fry of non-native trout species, such as rainbow, brown and brook trout. This was also done to provide a more sustainable and varied sport fishery.

Threats to Cutthroat Trout

Since settlement times, mankind has posed the greatest risk to the species and its habitat. Commercial and personal exploitation, introduction of non-native species and cross-breeding both depleted and changed the nature of the species. Dams and diversions dewatered streams and blocked migration routes. Irrigation, livestock grazing and industry changed water quality, chemistry and the nutrient loading. Waterways were channelized, riparian habitats were altered and human activities in drainages caused erosion and siltation and imbalance of entire hydrologic systems. In about a century, the species and its habitats faced possible extirpation from much of its ancestral range.

Current Status and Management

In 1973, the U.S. Congress passed the Endangered Species Act (ESA) which authorized the Secretary of the Interior to create a list of endangered fish and wildlife and gave the U.S. Fish and Wildlife Service (USFWS) management authority to preserve endangered species and their habitat. Those species that became listed under the ESA reverted from state to federal management and conservation.

Passage of the ESA prompted a flurry of fish and wildlife research by federal and state wildlife authorities. Publications and journals were researched, field inventories were conduct ed and at-risk species and populations were identified. Plans were put in place to rectify problems as they arose.

In the years following passage of the ESA, every cutthroat subspecies in Utah became the subject of review. In 1973, both the Lahontan and Greenback subspecies were listed as endangered. The Lahontan was down-listed to threatened in 1975. Three years later, the Greenback was similarly down-listed. In 1990, the Colorado River subspecies was petitioned for listing, but was ruled unwarranted in 2004. In 1998, both the Bonneville and Yellowstone cutthroats were petitioned for listing. Subsequent status reviews by the USFWS determined that listing in both these cases was unwarranted as well.

The Utah Division of Wildlife Resources (UDWR) has adopted a three-tiered conservation and management system to group sensitive species in order of greatest need. Species and subspecies of highest need are referred to as Tier I species.These are species that are federally listed as threatened or endangered, or are candidate species for federal listing. Both the Lahontan and Greenback cutthroat subspecies fall under the Tier I category. Because multi-state, multi-agency Conservation Agreements are in place for the Bonneville, Yellowstone and the Colorado River subspecies, these three subspecies are also considered Tier I species under the current system. This may change under a new system that is currently being developed.

UDWR's goal for cutthroat trout restoration is the return of each subspecies to its former drainage and geographic range within the state. Pure populations are protected against contamination from hybridization with other cutthroats or with rainbow trout, a close relative. Drainages where hybridization has occurred are rehabilitated by removal of non-native trout and restocking with native cutthroats. In situations where stocking of cutthroat trout is desirable, the native subspecies is used. Utah hatcheries that grow cutthroat trout are: Fountain Green, Glenwood, Mammoth Creek, Midway, Whiterocks and the Fisheries Experiment Station in Logan.

Hatchery biologists collect the reproductive products from spawning adults in the lakes and reservoirs that hold native cutthroat populations. During the spawning run, they set traps that capture the spawning trout. Eggs are stripped from females and milt from males. The two are mixed and taken to the hatcheries for culturing. Utah waters in which cutthroats are grown to collect eggs and milt are Bear Lake, Dougherty Basin, Duck Fork Reservoir, Kolob Reservoir, Lake Canyon Lake, Little Dell Reservoir, Manning Meadow, Mountain Dell Reservoir and Sheep Creek Lake. Most of these reservoirs are stocked with non-native trout for angler harvest, but the non-natives are sterile to prevent hybridization.

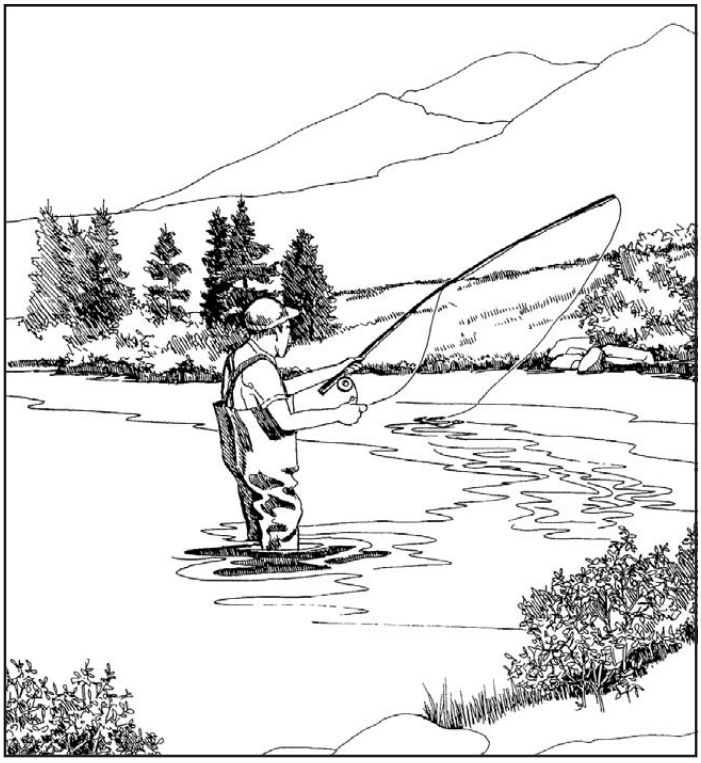
Fishing for Cutthroat Trout

Cutthroat trout are found in many waters throughout the state. If you'd like to know if cutthroats inhabit a specific body of water, go to: www.wildlife.utah.gov/hotspots.

Fishing for cutthroat trout is different than fishing for rainbow trout, which is the most commonly fished trout in Utah. While rainbow trout can be caught with a wide variety of baits including cheese and marshmallows, cutthroat trout are most frequently caught on chub or sucker meat, minnows or night crawlers. Cutthroats can also be caught on lures, spinners and crank baits that imitate natural foods or elicit an aggressive response. Small cutthroats can be hooked with a variety of artificial flies. It's important to know what foods are being eaten by the cutthroat trout in the water you plan to fish because using or mimicking a trout's natural foods is a good strategy for hooking one.

For anglers hoping to catch a state record cutthroat, here's what you are up against. The state record cutthroat trout weighed 26 pounds 12 ounces. It was caught at Strawberry Reservoir back in 1930. The catch-and-release record for a cutthroat trout was set at East Canyon Reservoir in 2011 with a 31½" fish.

Cutthroat trout are important today for their recreational, scientific and intrinsic values. Millions of years of adaptations have crafted this trout and the qualities it possesses. It is uniquely western in its ability to withstand the adversities imposed by nature and man. As its first and original trout, the cutthroat occupies an important role in Utah's aquatic ecosystem.



What You Can Do

• Join native trout conservation organizations such as Trout Unlimited, an organization dedicated to conserving, protecting and restoring North America's coldwater fisheries and their watersheds.Visit their website at http://www.tu.org/ for information.

• If you are a landowner of property through which a coldwater creek or stream flows, consider seeking technical expertise from state natural resource professionals. They can help assess the habitat quality of the waters on your land for sustaining cutthroat populations and advise on management practices to enhance habitat. Financial assistance for trout habitat improvement may be available through a variety of government agencies and other organizations.

• Contribute to wildlife through the Wildlife Tax Check-off on the Utah State Income Tax form or by making a contribution directly to the Utah Division of Wildlife Resources, 1594 W. North Temple, Suite 2110, Salt Lake City, UT 84116.

Additional Reading

Utah Division of Wildlife Resources. 2000. Range-wide conservation agreement and strategy for Bonneville cutthroat trout (*Oncorhynchus clarki utah*). Utah Division of Wildlife Resources, Salt Lake City, Utah. Publ. 00-19. http://wildlife.utah.gov/pdf/cacs7.pdf

CRCT Coordination Team. 2006. Conservation strategy for Colorado River cutthroat trout (*Oncorhynchus clarkii pleuriticus*) in the States of Colorado, Utah, and Wyoming. Colorado Division of Wildlife, Fort Collins. http://www.fws.gov/mountain-prairie/species/fish/crct/crct_conservation_strategy_jun06.pdf

The Western Native Trout Campaign. http://www.westerntrout.org/trout/index.htm

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Written by Brent Stettler, Conservation Outreach Manager, Southeastern Region, Utah Division of Wildlife Resources;
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